

## **SECTION 409 SEAL COAT**

**409.01 DESCRIPTION.** Seal coat is the application of a bituminous material, covered with aggregate on an existing roadway surface.

### **409.02 MATERIALS.**

**409.02.1 Bituminous Material.** Furnish bituminous material, either an emulsified or liquid asphalt as specified, meeting Section 702 requirements.

**409.02.2 Cover Aggregate.** Furnish cover aggregate meeting Subsection 701.02.8 and Table 701-12 requirements.

The responsibility for furnishing the aggregate source is specified in the Contract.

### **409.03 CONSTRUCTION REQUIREMENTS.**

**409.03.1 Sampling, Testing, and Acceptance.** Sampling, testing, and acceptance of cover aggregate is under Subsection 301.03.1 and the following:

Furnish at least 2 aggregate sampling pans, each a minimum of 2 feet x 2 feet X 2-inches (610 mm X 610 mm X 50 mm). Leg mount or support the pans to prevent disturbing the fresh asphalt when sampling.

Take samples while spreading chips, at locations randomly selected by the Project Manager. Place 2 sample pans on the roadway immediately ahead of the spreader between the spreader wheel paths. Stagger the pans longitudinally and transversely 3 to 6 feet (915 mm X 1,830 mm ) apart.

Once the spreader passes, retrieve the sample pans and turn them over to the Project Manager.

Replace or correct all asphalt removed or disturbed by the sampling and place cover aggregate over the sampling areas at the specified rate. Maintain the pans in good, clean condition.

**409.03.2 Aggregate and Bituminous Material Application Rates.** Request the Project Manager to sample the stockpiles representing the total cover aggregate production at least 15 days before seal coat work is to begin.

Recommended application rates for the cover and bituminous materials are established from these samples.

Do not begin seal coat work until the recommended application rates are established.

### **409.03.3 Equipment.**

**A. Distributors.** Use distributors meeting Subsection 410.03.1(A) requirements. Use spray bars capable of varying the application rates across the bar width up to 10 percent.

**B. Power Brooms.** Use rotary power brooms that are in good operable condition.

**C. Rollers.** Furnish pneumatic-tired rollers under Subsection 210.03.4 (D).

- D. Aggregate Spreaders.** Furnish aggregate spreaders meeting Subsection 410.03.1© requirements.

**409.03.4 Seasonal and Weather Limitations.** Begin seal coat work only with the Project Manager's approval. The following conditions govern seal coat work unless otherwise directed:

1. Perform seal coat operations between May 1 and August 20.
2. Do not perform seal coat work during the 48-hour period immediately preceding a holiday or a holiday weekend except for pilot car operation as specified in Subsection 409.03.13.
3. Do not perform seal coat work if the local radio weather forecast includes a predicted temperature lower than 45 °F (7 °C) within 12 hours after the intended close of work for the day. The Project Manager will determine which local radio forecast applies to the project.
4. Do not perform seal coat work if the local radio weather forecast includes a probability of precipitation greater than 45% within the intended schedule of operations for the day. Regardless of the weather forecast, seal coat work may be suspended if impending adverse weather conditions occur in the vicinity of the work.
5. Perform seal coat work only when both the ambient and mat temperatures exceed 65 °F (18 °C). When high-float emulsified asphalt's are used, the minimum temperature is 60 °F (16 °C).
6. Do not apply bituminous material to damp or wet roadway surfaces.
7. Immediately stop seal coat work if the wind velocity affects the distributor spray pattern or if current weather conditions prevent producing the specified results.
8. Stop seal coat work at least ½ hour before sunset.

**409.03.5 Aggregate Production and Stockpiling.** Produce and stockpile aggregate under Section 301.

**409.03.6 Protection of Traffic and Highway Structures.** Furnish traffic control meeting the approved traffic control plan and Section 618.

Furnish highway structure protection meeting Subsection 410.03.9(B) requirements.

**409.03.7 Sweeping.** Clean the roadway surface of all dust, dirt, and foreign material immediately before applying bituminous material.

**409.03.8 Application of Bituminous Materials.** Apply the bituminous material at the required temperature and rate using a pressure distributor.

Apply the liquid asphalt within the temperature range shown in Table II of MT-308 for the specified grade and manufacturer of the bituminous material.

The Project Manager may vary the application rate during the work.

Remove and correct any distributor causing drill marks or other defects.

When directed, calibrate the application rate on 1 or more 2,000 linear feet (610 m) shots.

Do not apply the bituminous material until cover aggregate for the entire application is immediately available.

Notify the Project Manager when the aggregate is available for sampling under Subsection 409.03.1.

Apply the bituminous material and cover aggregate at transverse and longitudinal joints so it is smooth and blends with the completed adjacent surface.

Longitudinal joints may be from 6 to 10-inches (155 to 255 mm) wide. Keep meet lines to a minimum, and locate them outside of the wheel paths. Prevent lapping at transverse joints. Before continuing the application, spread protective sheets back from the joint on the cover aggregate to prevent overlap.

The Project Manager may approve full roadway width bituminous and cover aggregate application in a single, continuous operation, sequenced to create the least inconvenience to traffic.

Do not permit traffic and aggregate haul trucks to cross over or drive on any uncovered bituminous material.

**409.03.9 Application of Cover Aggregate.** Uniformly apply the cover aggregate over the bituminous material at the directed rate. The spreader application rate must be controlled independently of its motive power. Remove aggregate spreaders from the work that do not uniformly distribute the aggregate in longitudinal lines.

The Contract cover aggregate quantities are an estimate only, and actual coverage rates may vary and are determined by the Project Manager.

Cover all transverse joints with aggregate and broom the aggregate back before applying the adjacent bituminous material. When longitudinal joints are covered to permit vehicle cross over, broom back the cover aggregate to expose the full width of the joint before applying the abutting bituminous material.

Use mechanical or hand brooming methods to make minor corrections to the cover aggregate distribution. Avoid displacing or loosening of the cover aggregate.

**409.03.10 High-Float Emulsified Asphalts and Liquid Asphalts.** Wet aggregate in the stockpile or in the trucks as required. Water carefully to minimize fines migration and contamination at the stockpile bases.

Permit high-float emulsions to develop a slight skin surface before applying cover material. The skin has developed when the surface of the high-float emulsion is black, with a brown color beneath the surface. Depending on weather conditions, the skin surface should form in 5 to 15 minutes after application.

**409.03.11 Emulsified Asphalts.** Assure the cover aggregate is wet when applied to the roadway. Water the aggregate as required. Water carefully to minimize fines migration and contamination at the stockpile bases.

For cationic emulsions, allow no more than one minute to elapse between applying the bituminous material and the aggregate covering. If an emulsified asphalt is not covered before it begins to break, the Project Manager will direct corrective steps, which may include applying additional materials, at Contractor expense.

**409.03.12 Rolling.** Begin rolling immediately behind the spreader. Provide the number of rollers needed to cover the full width of the aggregate spread in one pass.

Make at least 4 complete passes with each roller. Do not allow the roller speed to exceed 7 mph (11 kph) on the initial coverage. Additional rolling may be required.

**409.03.13 Opening to Traffic.** Open the roadway to traffic within one week after the seal coat work is completed. Use pilot cars to control the traffic's speed to not exceed 20 mph (32 kph) for the first 48 hours after opening to traffic.

Equip and operate pilot cars under Section 618.

On new constructed surfaces assure vehicles and equipment do not exceed 20 mph (32 kph) for the first 48 hours after opening. Promptly remove from the project personnel not observing this speed limit.

Broom on the day following the seal and cover application and before discontinuing the use of the pilot car. Broom in the early morning to minimize dust and to reduce loosening or displacing of embedded aggregate. Provide additional rolling if required.

If the seal coat fails to cure properly, or if inclement weather interrupts the 48 hour curing period, continue traffic control as directed.

Correct surface irregularities affecting the ride quality at Contractor expense. Cover areas showing excess bituminous material with additional aggregate or blotter material at Contractor expense.

#### **409.04 METHOD OF MEASUREMENT.**

**409.04.1 Bituminous Material.** Bituminous material is measured by the gallon (Liter) or by the ton (metric ton) under Subsection 402.04.

**409.04.2 Cover Aggregate.** Cover material is measured by the ton (metric ton) or by the cubic yard (cubic meter) under Subsection 301.04.1.

**409.04.3 Traffic Control.** Traffic control, including pilot car operation, is measured under Subsection 618.04.

**409.04.4 Rolling.** Rolling up to and including four complete passes is not measured for payment. Additional rolling directed by the Project Manager, beyond the specified four passes, is measured by the hour.

**409.05 BASIS OF PAYMENT.** Payment for the completed and accepted quantities is made under the following:

<b><u>Pay Item</u></b>	<b><u>Pay Unit</u></b>
Bituminous Material	Gallon (liter) or Ton (metric ton)
Cover Aggregate	Cubic Yard (cubic meter) or Ton (metric ton)
Traffic Control	See Subsection 618.05
Additional Rolling	Force Account

Payment at the contract unit price is full compensation for all necessary resources to complete the item of work under the Contract.

**409.05.1 Excess Crushed Cover Aggregate.** Sale of excess crushed cover aggregate is the Contractor's option. The Contractor cannot sell material from Department-owned or Department-optioned sources without a written agreement establishing and providing royalty refunds to the Department.

The Department may purchase the acceptable unused crushed cover aggregate remaining in the stockpile, if the quantity exceeds 100 tons (90 mt). The conditions of purchase are described in Subsection 109.07.

Haul from the stockpile site to the site selected by the Engineer will be by the most practical haul route determined by the Engineer. Payment for haul is 15 cents per ton mile (0.907 mt per 1.6 km) only for distances exceeding 2,000 feet (610 m).